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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,267	04/13/2004	Yongchi Tian	SAR-14916	5348
40562	7590	06/07/2005	EXAMINER	
SARNOFF/JACKSON PATENT DEPARTMENT, SARNOFF CORPORATION 201 WASHINGTON ROAD CN 5300 PRINCETON, NJ 08543-5300			KOSLOW, CAROL M	
			ART UNIT	PAPER NUMBER
			1755	

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/823,267

Applicant(s)

TIAN ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to: See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

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EP 1,155,455 cited in the information disclosure statement filed 13 April 2004 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. and fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

The supplied page states there is no abstract for this reference and thus there is no concise explanation of the relevance. Applicants also have not proved a copy of the reference.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Paragraphs 5 and 12 teach the amount of z is based on the mole amount of  $\text{Sr}_{1-x}\text{Ca}_x\text{Ga}_2\text{S}_4$  but claim 1 states teach the amount of z is based on the mole amount of  $\text{Sr}_{1-x}\text{Ca}_x\text{Ga}_2\text{S}_4:\text{yEu}^{2+}$ . This discrepancy needs to be clarified.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

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provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-8 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 10/823,288. Although the conflicting claims are not identical, they are not patentably distinct from each other because the device in patented claims contains the phosphor claimed in this application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-8 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10-12 of U.S. Patent No. 6,544,438. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims teach a divalent europium activated alkaline earth thiogallate comprising 0.1-7 % of gallium sulfide, where the alkaline earth is strontium and/or calcium which suggests the claimed phosphor. The patent phosphor has the formula  $(\text{Sr}_{1-x}\text{Ca}_x)\text{Ga}_2\text{S}_4:y\text{Eu}^{2+}:0.001-0.07\text{Ga}_2\text{S}_3$ , where x is 0-1 and y is that amount sufficient to provide luminescence. Since the taught formula overlaps that claimed, one of ordinary skill in the art would expect the taught phosphor to inherently have a emission peak range and peak bandwidth range that overlaps the claimed ranges, absent any showing to the contrary.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent 6,544,438.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

This reference teaches a divalent europium activated calcium thiogallate comprising 0.1-7 % of gallium sulfide. The formula for this phosphor is  $\text{CaGa}_2\text{S}_4 \cdot y\text{Eu}^{2+} \cdot 0.001-0.07\text{Ga}_2\text{S}_3$ , where  $y$  is 0.01-0.6, as taught in column 1, line 47. This formula falls within that of claims 1-5. Since the taught formula falls within that claimed, one of ordinary skill in the art would expect the taught phosphor to inherently have a emission peak and peak bandwidth that falls within the claimed ranges, absent any showing to the contrary.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,544,438.

There is evidence in this file showing that the invention was owned by, or subject to an obligation of assignment to, the same entity as U.S. patent 6,544,438 at the time this invention was made. Accordingly, this patent is disqualified as prior art through 35 U.S.C. 102(e), (f) or (g) in any rejection under 35 U.S.C. 103(a) in this application. However, this applied art additionally qualifies as prior art under another subsection of 35 U.S.C. 102 and accordingly is not disqualified as prior art under 35 U.S.C. 103(a).

Applicant may overcome the applied art either by a showing under 37 CFR 1.132 that the invention disclosed therein was derived from the inventor of this application, and is therefore, not the invention "by another", or by antedating the applied art under 37 CFR 1.131.

This reference teaches a divalent europium activated calcium thiogallate comprising 0.1-7 % of gallium sulfide and a divalent europium activated strontium calcium thiogallate comprising 0.1-7 % of gallium sulfide. The formula for the first phosphor is  $\text{CaGa}_2\text{S}_4:\text{yEu}^{2+}:0.001-0.07\text{Ga}_2\text{S}_3$ , where y is 0.01-0.6. The taught amount of y overlaps that of claim 6. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960).

The formula for the second phosphor is  $(\text{Sr}_{1-x}\text{Ca}_x)\text{Ga}_2\text{S}_4:\text{yEu}^{2+}:0.001-0.07\text{Ga}_2\text{S}_3$ , where y is 0.01-0.6 and  $0 < x < 1$ . The taught amount of y falls within that of claims 1, 4 and 5 and overlaps that of claim 6. The taught amount of x overlaps that of claim 1 and the amount of gallium sulfide falls

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within that of claims 1-3. Since the taught formulas overlap that claimed, one of ordinary skill in the art would expect the taught phosphor to inherently have a emission peak range and peak bandwidth range that overlaps the claimed ranges, absent any showing to the contrary.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,773,629.

This reference teaches an  $AB_2S_4$  phosphor with a  $B_2S_3$  phase. B can be gallium and A can be Ca. The activator can be divalent europium. The phosphor is produced from mixture of A, B and activator precursor where the ratio of  $B/(A+\text{activator})$  is 2.06-2.25. Thus, the amount of the  $B_2S_3$  phase is 0.06-0.25. The amount of activator in the phosphor is at most 10 at%. The formula for this phosphor can be written as  $CaGa_2S_4:yEu^{2+}:0.06-0.25Ga_2S_3$ , where y is at most 0.1 and at least the lowest amount that is sufficient to provide luminescence. The amount of  $Ga_2S_3$  overlaps the claimed range and the amount of europium falls within and overlaps the claimed ranges.

Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960).

Since the taught formula overlaps that claimed, one of ordinary skill in the art would expect the taught phosphor to inherently have a emission peak range and peak bandwidth range that overlaps the claimed ranges, absent any showing to the contrary.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/95400.

U.S. patent 6,695,982 is the English language equivalent to WO 01/95400

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This reference teaches a phosphor having the formula  $(AS)_w(B_2S_3)_tD^{2+}$ , where A can be Ca and/or Sr, B can be Ga, D can be Eu, w is 1.02-1.2 and t is 0.01-0.1. This formula can be rewritten as  $Sr_{1-x}Ca_xGa_2S_4:yEu^{2+}:0.02-0.2Ga_2S_3$ , where x is 0-1 and y is 0.01-0.1. The amount of  $Ga_2S_3$  falls within and overlaps the claimed range, the amount of europium falls within and overlaps the claimed ranges and the taught x range overlaps that claimed. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960).

Since the taught formula overlaps that claimed, one of ordinary skill in the art would expect the taught phosphor to inherently have a emission peak range and peak bandwidth range that overlaps the claimed ranges, absent any showing to the contrary.

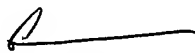
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk  
June 3, 2005

  
C. Melissa Koslow  
Primary Examiner  
Tech. Center 1700